

ABSTRACT OF THE DISCLOSURE

A solid state fuel cell is fabricated from three substructures. There is a porous anode made from n+ silicon which is surrounded by a non-porous ring. The pore size of the anode material is sufficiently large to allow hydrogen gas to flow through and is of a sufficiently high conductivity to easily permit current flow of electrons. One side of the anode has enlarged pores and a layer of titanium and platinum is sputtered or otherwise deposited on the surface with the enlarged pores to produce a coated surface. A cathode is made in a similar manner and is fabricated as the anode. There is a center electrolytic section made from a low conductivity silicon or silicon carbide. The center electrolytic section has the coated side of the anode secured to one side and has the coated side of the cathode secured to the other side. The other or un-coated face of both the anode and the cathode has an electrical contact secured thereto to permit electrons to leave the anode and to reenter the cathode. The electrolytic center structure is filled with an ionic conductor. In this manner, hydrogen is broken into ions and electrons. The electrons cause a current flow, while the ions react with oxygen and produce water which is discharged from the fuel cell as steam or vapor.